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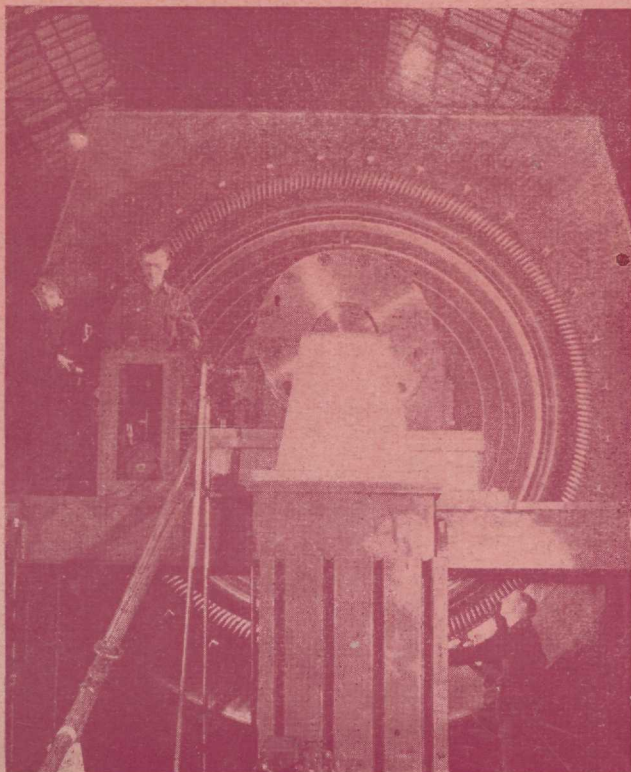
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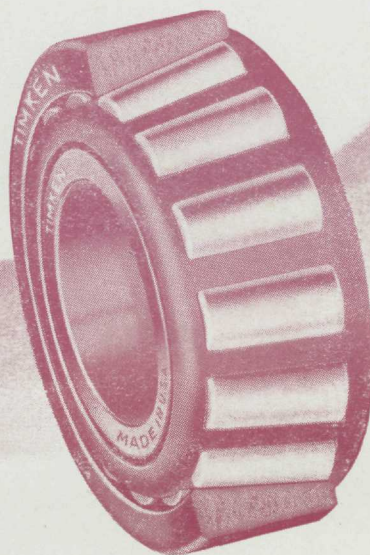
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December, 1944

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Be a better Engineer

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Parent of Precision**



Just as the design of the Timken Tapered Roller Bearing has been developed and improved steadily over a long period of years, so also has the manufacture of the Timken Bearing been brought to its supremely high standard.

The factory of The Timken Roller Bearing Company is not only the largest in the world devoted exclusively to the manufacture of tapered roller bearings; it also is one of the world's finest examples of precision production on an extensive scale.

To give the Timken Roller Bearing its watch-like accuracy, many millions of dollars are invested in tools, gauges and automatic ma-

chines of all kinds. Tolerances of less than one ten-thousandth of an inch are regularly adhered to in many phases of manufacture.

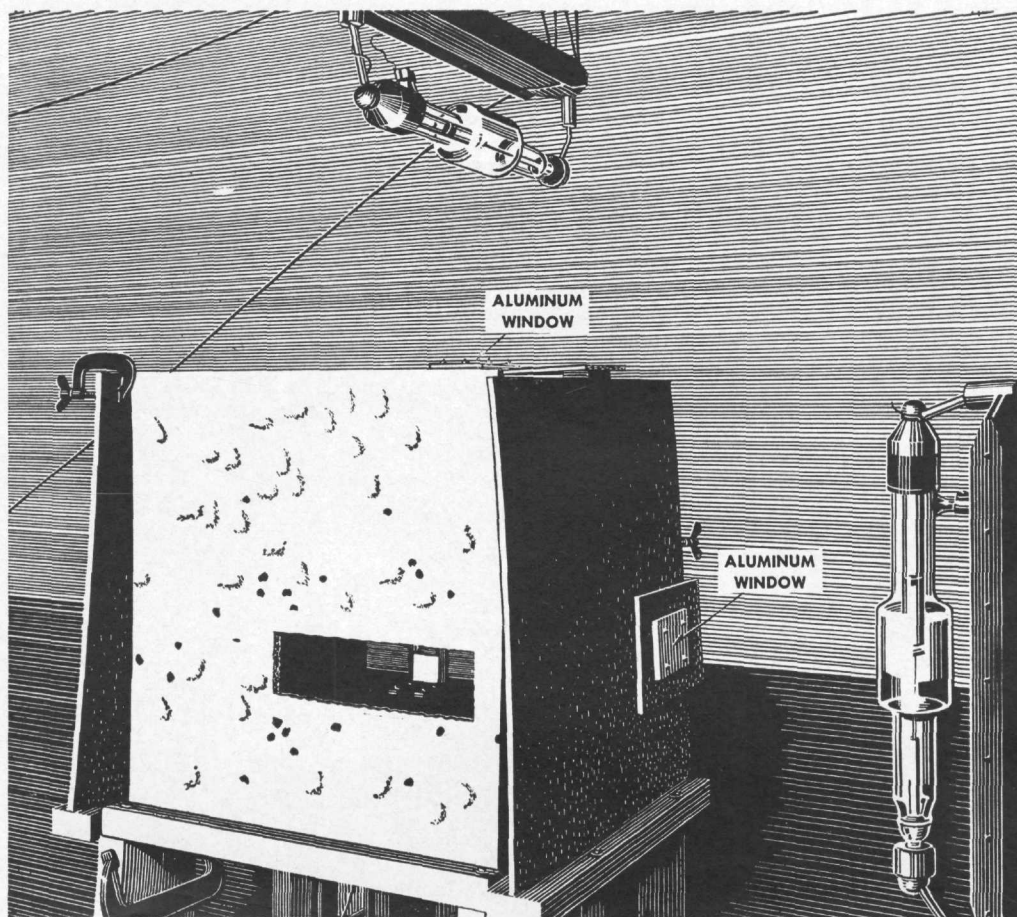
Thus, although millions of Timken Bearings are produced every month, so accurate are our manufacturing methods and so careful our inspection and testing, that uniformity of quality — and consequently of performance — are consistently maintained.

No matter what type of machine you may be designing, nor the bearing service factors involved, you can always depend upon Timken Bearings to meet every requirement with utmost efficiency. The Timken Roller Bearing Company, Canton 6, Ohio.

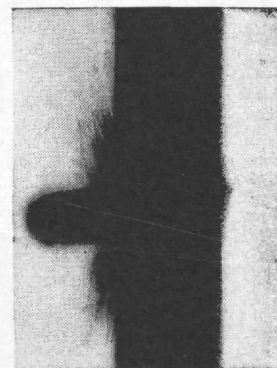
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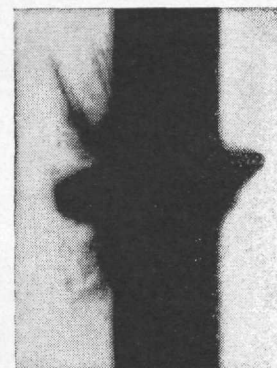
TAPERED ROLLER BEARINGS



PICTURES COURTESY LABORATORY DIVISION, FRANKFORD ARSENAL



High-speed X-ray picture of cal. .30 bullet penetrating 1/2 inch thick armor



High-speed X-ray picture of same bullet 20 millionths of a second later

14,285 times quicker than a wink

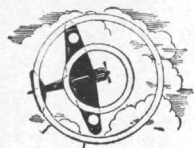
KEEPING UP WITH *Electricity*

MAN-MADE HURRICANE BLOWS OUT ELECTRICITY.

Engineers can now "blow out" electricity as easily as you extinguish the flame from your cigarette lighter. Circuit breakers built by Westinghouse unleash a 600-mile-an-hour blast of compressed air to snuff out powerful short-circuit arcs and prevent damage to vital electrical equipment on power lines. The hurricane of air can smother a 1,000,000-kilowatt electric arc in less than a hundredth of a second.

REPRESENTATIVES OF 257 PRE-WAR PROFESSIONS, businesses, and trades are now employed at the Westinghouse operated Naval Gun Plant at Louisville, Kentucky. Included are: former circus performers, several embalmers, a former professional hill-billy musician, and a pipe-organ builder. Despite their unusual peace-time occupations, all here have been able to learn the amazing high

precision needed in making Naval guns.



A NEW GUNSIGHT LAMP that enables American gunners to aim *directly into the sun* and yet fire with deadly accuracy has been developed for the Army and Navy by Westinghouse Lamp Engineers. Former gunsight lamps allowed gunners to aim within only 15 degrees of the sun, leaving a dreaded "blind spot."

FREE . . . "Engineering Highlights of 1944"—a 32 page book, filled with interesting articles on new developments in electrical research and engineering in wartime. Write: Westinghouse Engineer (EC-124).

Westinghouse research engineers have developed an ultra-high speed X-ray tube that makes possible X-ray pictures, taken at the terrific speed of *one-millionth of a second*. These pictures show armor-piercing bullets penetrating 1/2 inch of solid steel armor plate.

The action is 10,000 times faster than any conventional X-ray—literally 14,285 times *quicker than a wink!*

Secret of this revolutionary X-ray is the new type tube that can handle a jolt of 2000 amperes, at 300,000 volts. This is applied in a flash by electrostatic condensers—creating a tremendous surge of *X-radiation*.

With this new X-ray, U.S. Army ballistic experts can "freeze" the image of a bullet, while it travels within a gun barrel at 2600 feet per second—or study the action of projectiles as they smash through armor plate.

When peace returns, this new example of Westinghouse *skill in research* will enable machine builders to study the strains in rapidly moving parts—improve performance and increase the life of peacetime products.

Westinghouse Electric & Manufacturing Company, Pittsburgh 30, Pennsylvania.

Westinghouse

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TUNE IN: John Charles Thomas, Sunday 2.30, EWT, NBC
Ted Malone, Mon. Wed. Fri., 10:15 pm, EWT, Blue Network

December, 1944

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Engineering Achievements in the Field



A veteran Pacific Pump—modernized and again ready for service.

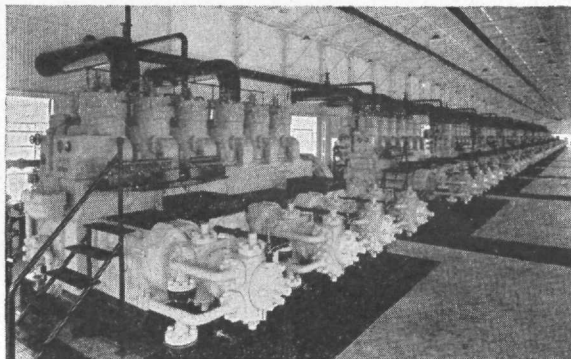
Another Record Pumping Achievement for Pacific

BUILT with precision tolerances down to a third of a hair's breadth, this 4" 10-stage Pacific Hot Oil Centrifugal Pump took the terrific punishment of ten years' continuous service, in a large West Coast refinery, under pressures of 1750 pounds and temperatures up to 850° F. *Think of it.*

With forged steel outer case and chrome steel inner case and fittings, it poured out seething hot oil at the rate of 680 G.P.M. operating at 3450 R.P.M. It went into action in June 1933.

In November 1943, after a complete check-up, modernization and replacement of a few minor parts, this "stout fella" was declared good as new and sent back to the firing line for another long period of pumping efficiency.

Pacific Pumps are *tough*, and they take it! Engineered design and precision workmanship make such pumping records possible.



Twelve 6-cylinder 600 B.H.P. CLARK "Angles" in the Cotton Valley Recycling Plant, Cotton Valley, Louisiana.

Twelve 600 B.H.P. CLARK "Angles" comprise the compressor battery in the Cotton Valley Plant. The plant capacity is 150,000,000 cubic feet of gas daily which is supplied from 69 condensate wells.

"Two of the Dresser Industries"

PACIFIC PUMP WORKS ~ CLARK BROS. CO., INC.

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BOSTON, MASSACHUSETTS
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TOUGH TRICK TO LICK A SLIP STICK



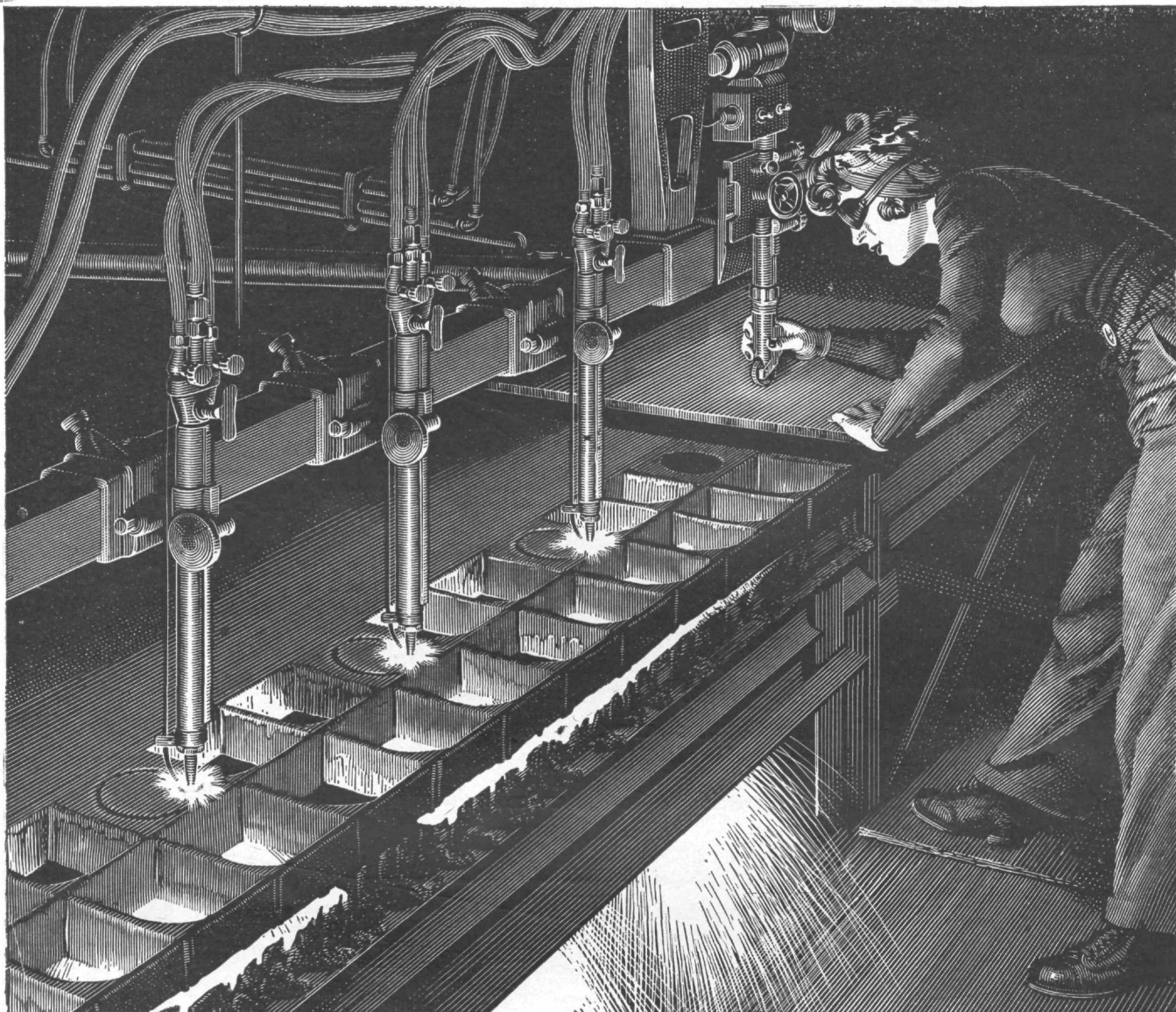
Slide rules, calculus, etc., are sure hard to swallow—but—after the war your mathematical menu may help you figure out a grand job in the aviation industry



BUY WAR BONDS—BUY FOR KEEPS

December, 1944

Page 3



Women flame-fashion steel for war

Using the fastest of cutting tools—the oxyacetylene flame—in Airco multiple-torch gas cutting machines, women operators throughout industry quickly fashion steel into the vast array of shapes required for a host of war products.

Airco gas cutting machines are designed for easy—almost automatic—operation, and for

this reason women with even slight mechanical experience have proved able to run them successfully. Today in shipyards and tank arsenals—in literally thousands of war plants—women operators and Airco machines are speeding production of steel weapons to hasten the arrival of "V" Day.

Simplicity and ease of operation are outstanding characteristics of all Air

Reduction gas cutting machines. They are made in a wide range of types and sizes to meet every steel-cutting requirement of industry.

If you would like to receive our informative publication, "Airco in the News," we shall be glad to send a free copy. Write to Mr. G. Van Alstyne, Dept. C. P., Air Reduction, 60 East 42nd Street, New York 17, N. Y.

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Our Frontispiece

Supplementing the newspaper of tomorrow will be the television receiver.

Courtesy General Electric

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